



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,067	01/26/2006	Pascal Diss	BDL-494XX	2032
207 7590 03/02/2011 WEINGARTEN, SCHURGIN, GAGNEBIN & LEBOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109				
EXAMINER MURATA, AUSTIN				
ART UNIT		PAPER NUMBER		
1712				
MAIL DATE		DELIVERY MODE		
03/02/2011		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/566,067

Applicant(s)

DISS ET AL

Examiner

AUSTIN MURATA

Art Unit

1712

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5,7-11,14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) 9-11 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7,8 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/28/2011
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This action is nonfinal. Claims 9-11 and 14 are withdrawn.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/28/2011 has been entered.

Response to Amendment

The amendment to claims filed 1/28/2011 has been entered and fully considered.

The declaration under 37 CFR 1.132 filed 1/28/2011 is insufficient to overcome the rejection of claims 1, 4, 5, 7 and 8 based upon DE NORA (US 6,228,424) as set forth in the last Office action because:

A portion of the declaration intended to show that the originally filed disclosure implicitly discloses performing the impregnation step while the composition is at ambient conditions. The examiner notes that the declaration of what was allegedly not obvious was made by an expert that has an interest in the outcome of the case as an inventor. In addition no further factual support was given with the opinion which further reduces the weight given to the declaration. Furthermore, due to the lack of written disclosure for applying the composition at ambient conditions it is unclear if such a step was possessed by the applicant at the time of the invention. If applying at ambient

conditions was part of the invention it should have been clearly written in the specification as 35 U.S.C 112 requires full disclosure of the invention.

Further the examiner notes that the expert's opinion is that one of ordinary skill in the art would not make a composition of aluminum phosphate and titanium diboride due to the reaction that would form a highly insoluble component. The examiner again points out that the opinion was provided by the inventor who has an interest in the outcome of the case and again does not provide factual evidence. Furthermore the examiner points out evidence contrary to the experts opinion where DE NORA teaches providing liquids based on phosphates of aluminum **column 4 line 11-16** that may further optionally contain TiB_2 and/or aluminum powder **column 4 lines 44-47**. Therefore the declarations attempt to overcome the DE NORA reference is ineffective.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 15 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The originally filed disclosure does not provide support for ambient deposition of the impregnation composition. The spraying or brushing technique is performed at temperatures other than ambient as evidenced by

DE NORA and explained above. Furthermore the step of heating the impregnation composition to 350°C does not imply the starting temperature was ambient. It only supports the starting temperature was less than 350°C.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Furthermore, the term "ambient" in claim 15 is a relative term which renders the claim indefinite. The term "ambient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. As described above the closest support the examiner found to "ambient" condition is under 350°C as it must start at some point below that temperature in order to be gradually heated to 350°C in step d of the process (example 1). Therefore for the purposes of examination ambient is considered any temperature under 350°C

Response to Arguments

Applicant's arguments filed 1/28/2011 have been fully considered but they are not persuasive.

Applicant argues the DE NORA reference uses a different mechanism to provide protection against oxidation and does not teach the composition of TiB_2 and $AlPO_4$ because the reaction of TiB_2 and $AlPO_4$ that occurs would make an insoluble compound

that would prevent the deposition mechanism of DE NORA. However, the examiner respectfully points out the DE NORA reference teaches using the same impregnation composition as required by the claims in an alternative treating liquid of aluminum phosphate **column 4 lines 11-16** that optionally includes a suspension of particles that can include refractory boride such as TiB_2 **column 4 lines 35-47**. Further as described above the declaration is ineffective in showing the reaction of TiB_2 and $AlPO_4$ at 60-120°C.

Applicant further argues the MOREL reference teaches known refractory borides are both ZrB_2 and TiB_2 . The reference is relied upon merely to show the size of refractory borides used in oxidation protection coatings is known to be micron scale powder.

In view of the amendments moving limitations into claim 1 the rejections have been respectively changed below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 5, 7, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE NORA (US 6,228,424) in view of MOREL (US 5,420,084).

Regarding claim 1,

DE NORA teaches protecting a carbon component (composite material containing carbon) from oxidation by impregnation, see **abstract**. The reference further teaches providing a treating liquid (impregnation composition) of phosphates of aluminum (metal phosphate) **column 4 lines 12-13**. The reference also teaches for certain applications the impregnation liquid can include particulate refractory boride such as TiB_2 see **column 4 lines 44-47**. The liquid is referred to as an impregnation coating (impregnating with impregnation composition) **column 4 line 45**.

DE NORA teaches a treating solution contains water, **column 3 line 35**, metal phosphates, **column 4 lines 12-13**, titanium boride, **column 4 line 47**, and particles

(solid refractory filler other than TiB_2), **column 4 lines 35-43**. The reference is silent to the weight percentages used. However the examiner points out that the composition of the impregnation solution ultimately effects the final composition of the protective layer formed. Therefore changes in composition of the impregnation solution can be considered a result effective variable as the resulting protective layer has a composition that reflects the starting composition of the solution. Differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical MPEP 2144.05 II A.

In addition, DE NORA teaches a treating solution for protecting a carbon containing part but does not expressly teach the titanium boride having a particle size in the range of $0.1\mu m$ to $200\mu m$. However, MOREL teaches that two refractory borides known for use in oxidation protection coatings are titanium diboride and zirconium diboride **column 2 lines 54-56** which has particles of 10 to 40 microns, see **column 2 lines 25-26**. As an known refractory boride powder is being used for the same purpose, at the time of the invention it would have been prima facie obvious to one of ordinary skill in the art to use the same particle size in the powder of titanium diboride and zirconium diboride for oxidation protective coatings.

Regarding claims 4,

DE NORA also teaches another particle in the treating liquid **column 4 lines 35-37** of aluminum **column 4 line 47**.

Regarding claim 5,

DE NORA teaches using aluminum phosphate in **column 4 line 14**.

Regarding claim 7 and 8,

DE NORA teaches a protective coating from oxidation according to the limitations of claim 1 but does not expressly teach the preliminary step of impregnating with a wetting agent. However, MOREL teaches a protective coating from oxidation that includes using an adhesive underlayer. In example 3 **column 5 line 37-42** zinc phosphate was pretreated followed by direct heating. At the time of the invention it would have been prima facie obvious to one of ordinary skill in the art to include a preliminary stage of treating and drying to improve adhesion of a subsequent protective coating, see **column 2 line 14**. The zinc phosphate did not have any solid filler.

Regarding claim 15,

The examiner notes that the claim does not mention when the composition is at ambient temperature. Therefore the DE NORA process that cools during deposition to ambient temperature is an impregnation composition at ambient temperature.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AUSTIN MURATA whose telephone number is (571)270-5596. The examiner can normally be reached on Monday through Friday 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL CLEVELAND can be reached on (571)272-1418. The fax phone

Art Unit: 1712

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AUSTIN MURATA/
Examiner, Art Unit 1712

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1712